

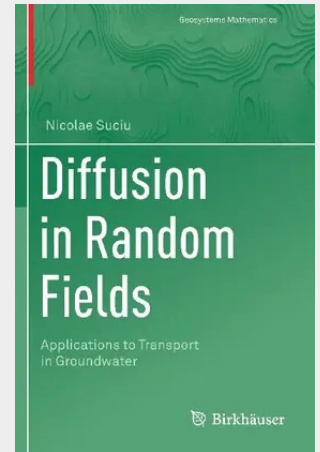
Diffusion in Random Fields

Applications to Transport in Groundwater

This book presents, in an accessible and self-consistent way, the theory of diffusion in random velocity fields, together with robust numerical simulation approaches. The focus is on transport processes in natural porous media, with applications to contaminant transport in groundwater. Starting from basic information on stochastic processes, more challenging issues are subsequently addressed, such as the correlation structure of the diffusion process in random fields, the relation between memory effects and ergodic properties, derivation and parameterizations of evolution equations for probability densities, and the relation between measurements and spatio-temporal upscaling.

Written for readers with a background in applied mathematics, engineering, physics or geophysics, the book offers an essential basis for further research in the stochastic modeling of groundwater systems.

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